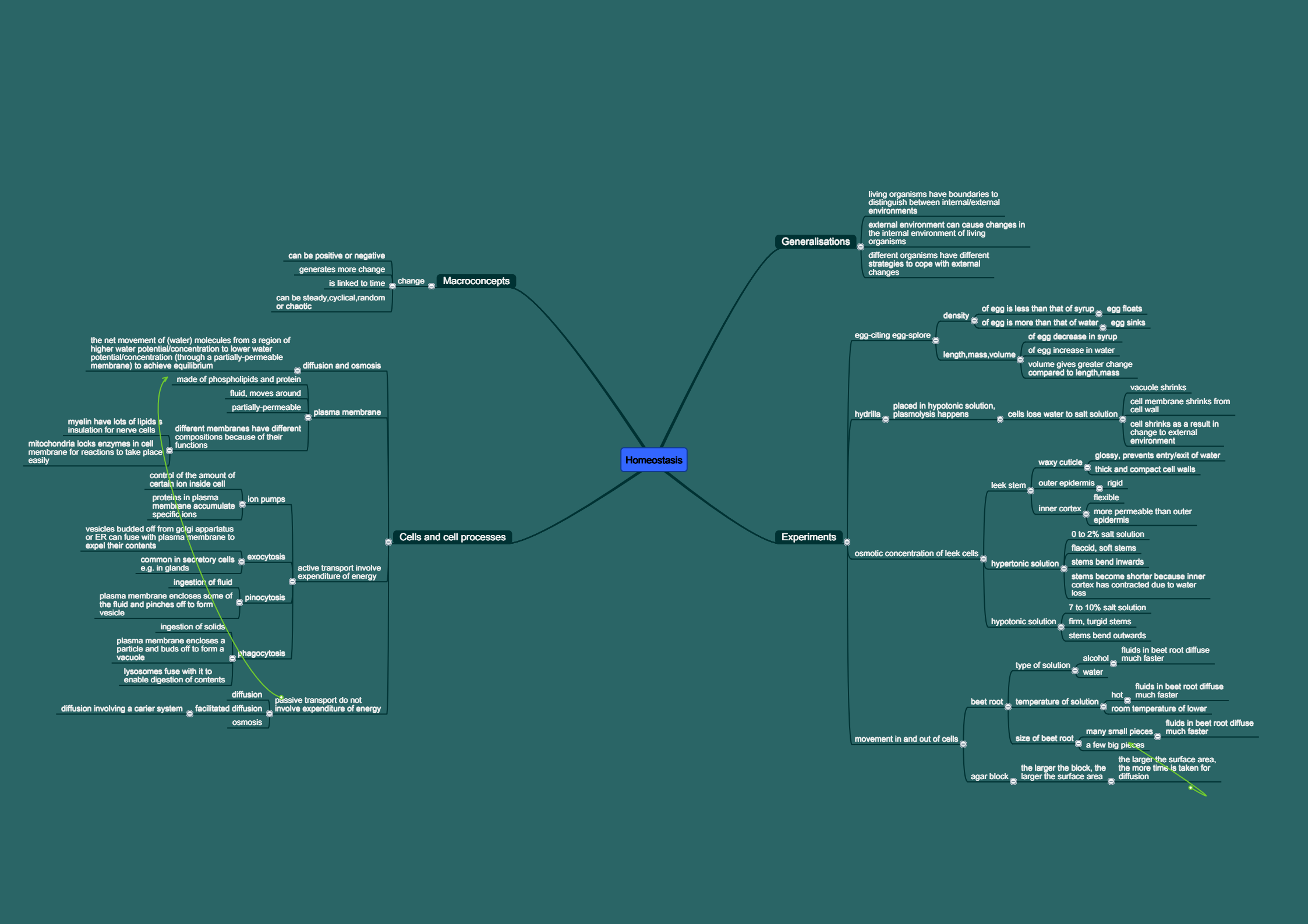
Homeostasis
Generalisations
living organisms have boundaries to distinguish between internal/external environments
external environment can cause changes in the internal environment of living organisms
different organisms have different strategies to cope with external changes
Macroconcepts
change
can be positive or negative
generates more change
is linked to time
can be steady,cyclical,random or chaotic
Experiments
egg-citing egg-spiore
density
of egg is less than that of syrup
egg floats
of egg is more than that of water
egg sinks
length,mass,volume
of egg decrease in syrup
of egg increase in water
volume gives greater change compared to length,mass
hydrilla
placed in hypotonic solution, plasmolysis happens
cells lose water to salt solution
vacuole shrinks
cell membrane shrinks from cell wall
cell shrinks as a result in change to external environment
osmotic concentration of leek cells
leek stem
waxy cuticle
glossy, prevents entry/exit of water
thick and compact cell walls
outer epidermis
rigid
flexible
inner cortex
more permeable than outer epidermis
hypertonic solution
0 to 2% salt solution
flaccid, soft stems
stems bend inwards
stems become shorter because inner cortex has contracted due to water loss
hypotonic solution
7 to 10% salt solution
firm, turgid stems
stems bend outwards
movement in and out of cells
beet root
type of solution
alcohol
fluids in beet root diffuse much faster
water
temperature of solution
hot
fluids in beet root diffuse much faster
room temperature of lower
size of beet root
many small pieces
fluids in beet root diffuse much faster
a few big pieces
agar block
the larger the block, the larger the surface area
the larger the surface area, the more time is taken for diffusion
Cells and cell processes
diffusion and osmosis
the net movement of (water) molecules from a region of higher water potential/concentration to lower water potential/concentration (through a partially-permeable membrane) to achieve equilibrium
plasma membrane
made of phospholipids and protein
fluid, moves around
partially-permeable
different membranes have different compositions because of their functions
myelin have lots of lipids s insulation for nerve cells
mitochondria locks enzymes in cell membrane for reactions to take place easily
active transport involve expenditure of energy
ion pumps
control of the amount of certain ion inside cell
proteins in plasma membrane accumulate specific ions
exocytosis
vesicles budded off from golgi appartatus or ER can fuse with plasma membrane to expel their contents
common in secretory cells e.g. in glands
pinocytosis
ingestion of fluid
plasma membrane encloses some of the fluid and pinches off to form vesicle
phagocytosis
ingestion of solids
plasma membrane encloses a particle and buds off to form a vacuole
lysosomes fuse with it to enable digestion of contents
passive transport do not involve expenditure of energy
diffusion
facilitated diffusion
diffusion involving a carier system
osmosis